

(12) UK Patent Application (19) GB (11) 2 181 465 (13) A

(43) Application published 23 Apr 1987

(21) Application No 8622888

(22) Date of filing 23 Sep 1986

(30) Priority data

(31) 60/218715
80/201733

(32) 30 Sep 1985
25 Dec 1985

(33) JP

(51) INT CL⁴

D06H 3/16 // D06C 5/00

(52) Domestic classification (Edition I):

D1S 15 32
U1S 1130 D1S

(56) Documents cited

None

(58) Field of search

D1S
Selected US specifications from IPC sub-classes D06C
D06H

(71) Applicant

Takatori Machinery Mfg Co Ltd

(Incorporated in Japan)

1-31 Asahiminami-machi, Yamatotakada-shi, Nara-ken,
Japan

(74) Agent and/or Address for Service

Baron & Warren,
18 South End, Kensington, London W8 5BU

(72) Inventors

Oushou Takatori
Toyomi Kuniki
Satoru Yamaji

(54) Automatic hose-fitting apparatus

(57) Apparatus is disclosed for automatically taking off inspected pairs of hose (1) from successive pattern plates (22) of a hose-inspecting apparatus and transferring them to, and fitting them on, successive pattern plates (12) of a hose-finishing apparatus. The inspection and finishing pattern plates travel along horizontal paths to a transfer station where each hose-supporting inspection pattern plate (22) is located opposite one of the finishing pattern plates (12) with a predetermined space therebetween. The hose-transfer/fitting apparatus includes a finger (43) and a pair of levers (44) that serve to maintain the finger in an upright position as it ascends and descends the vertical regions of an endless track (37) between opposed finishing and inspection plates, driven by a pair of conveyor belts (33). Thus, as the finger (43) ascends close to the opposed inspection pattern plate (22), the finger enters from below the pair of hose on the plate (22) removing the hose upwardly from the plate (22). As the finger (43) subsequently descends close to the opposed finishing pattern plate (12), the latter plate enters the hose on the finger from below, removing it from the descending finger, and transferring it to the plate (12).

FIG.4

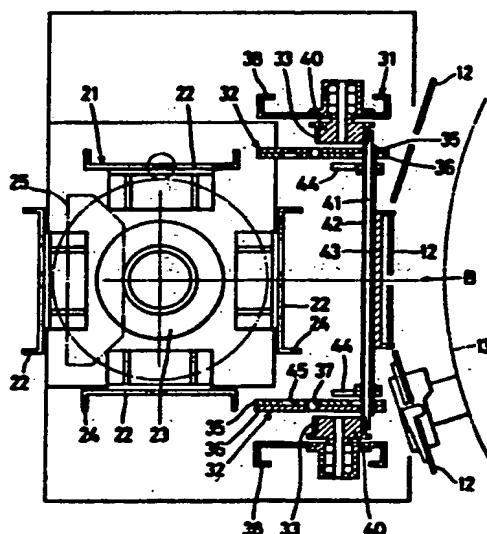
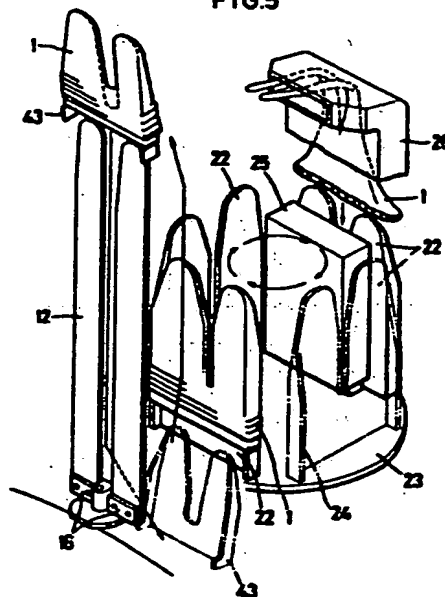


FIG.5



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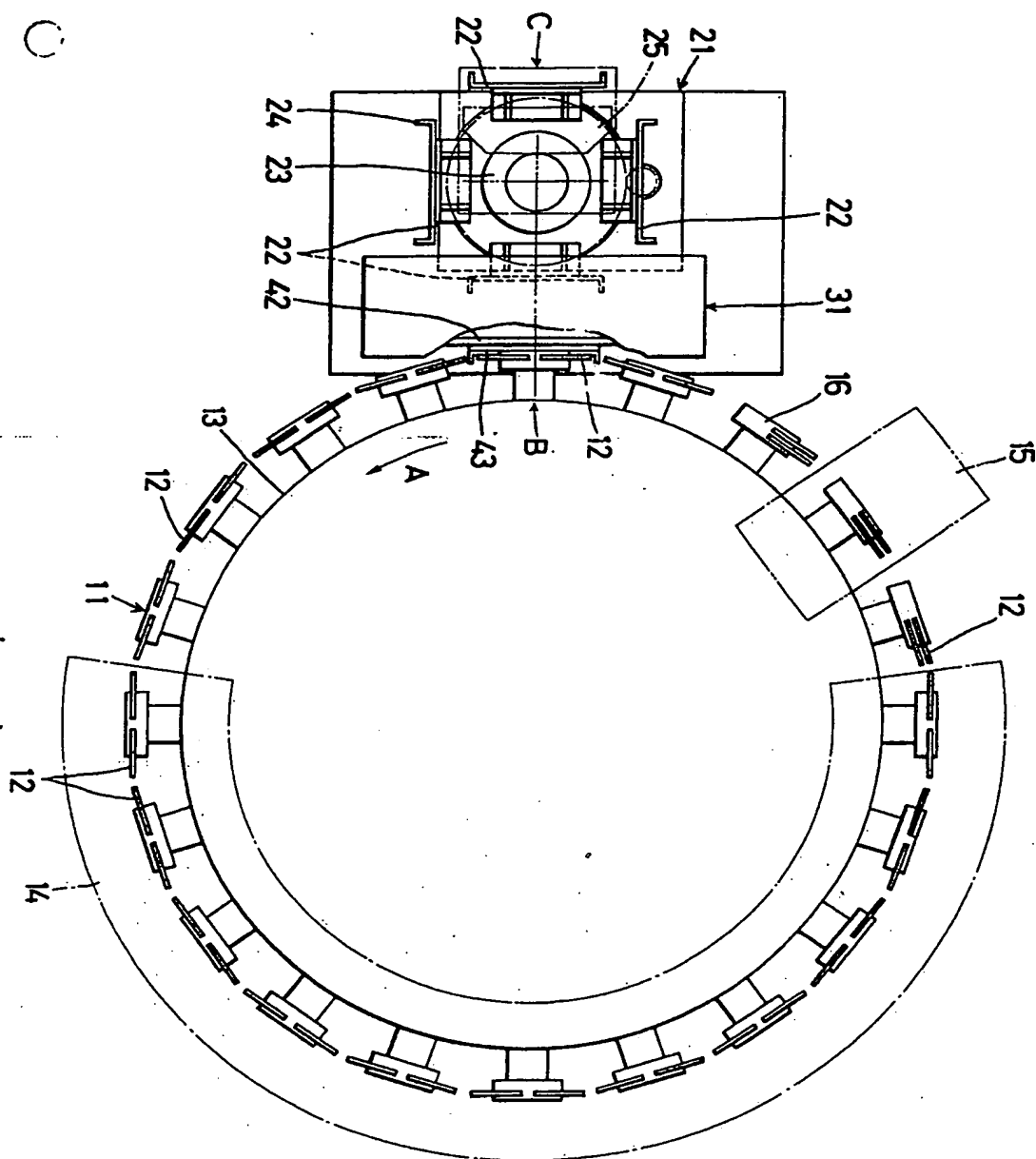


FIG. 1

FIG. 2

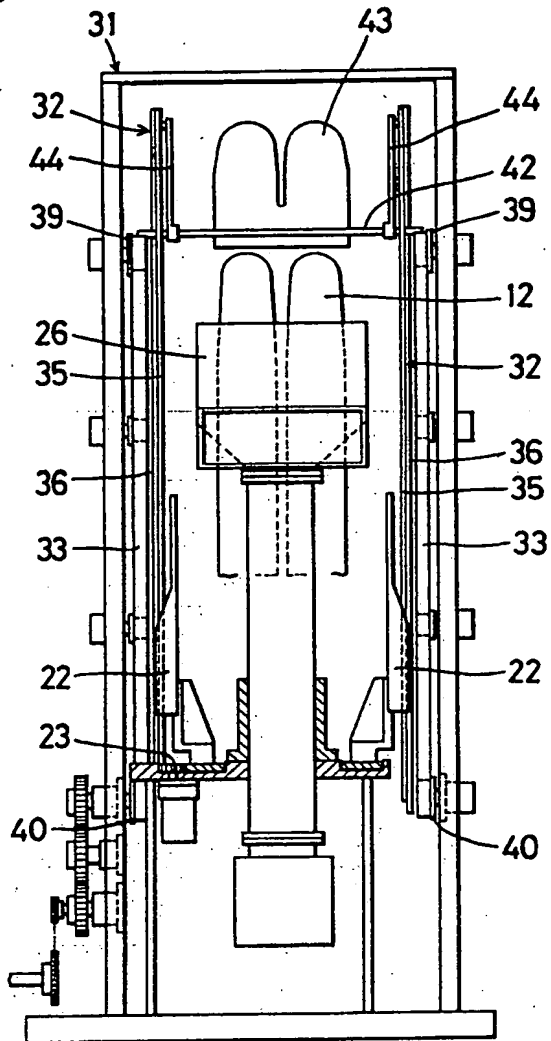


FIG. 3

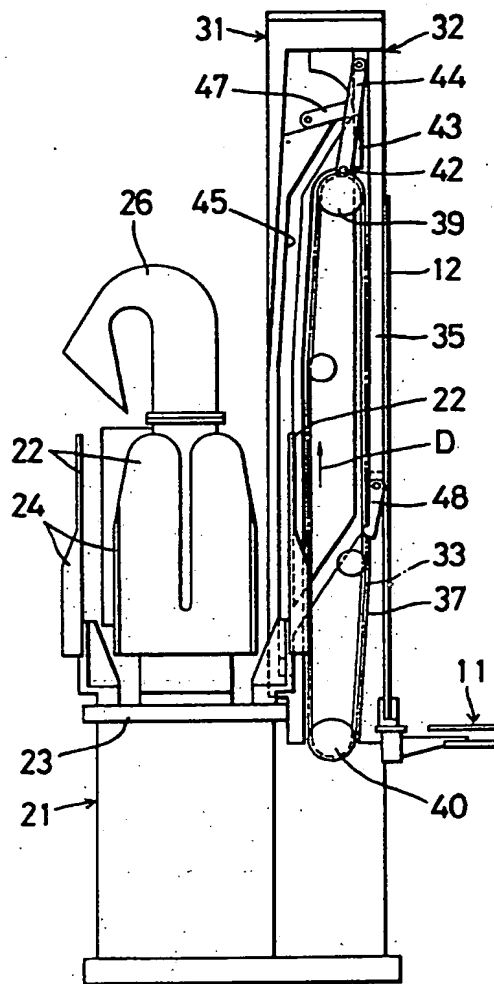


FIG.4

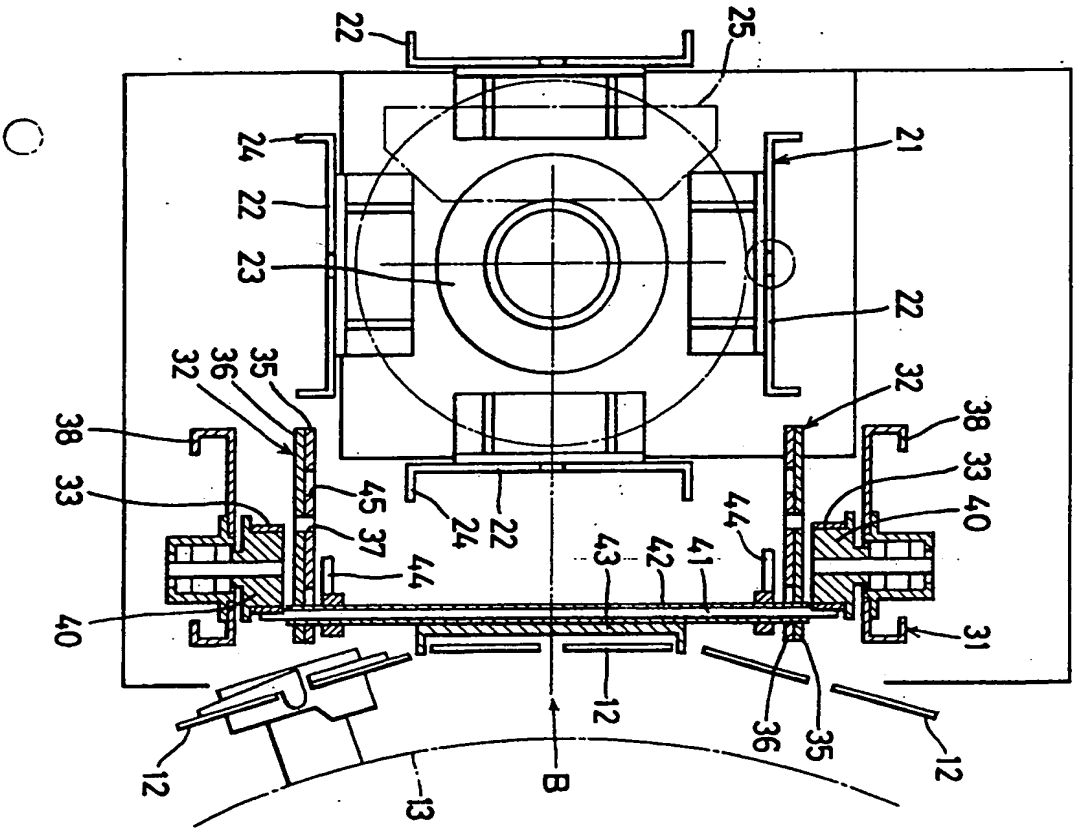
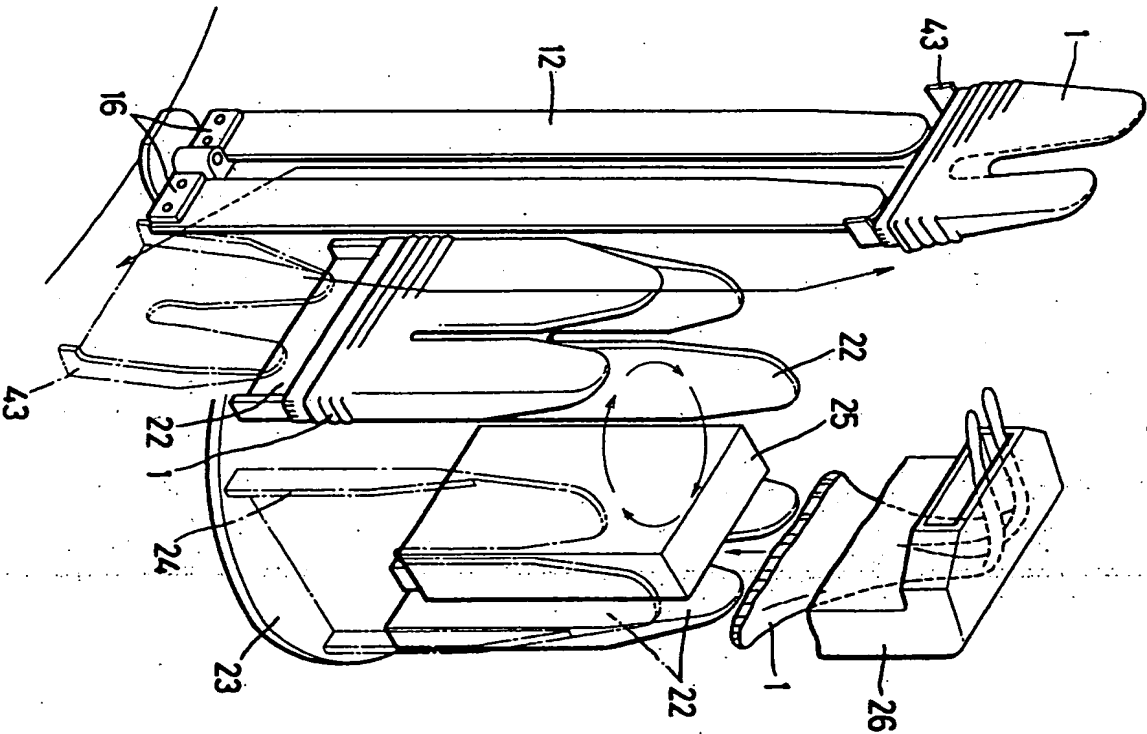


FIG.5



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FIG. 6

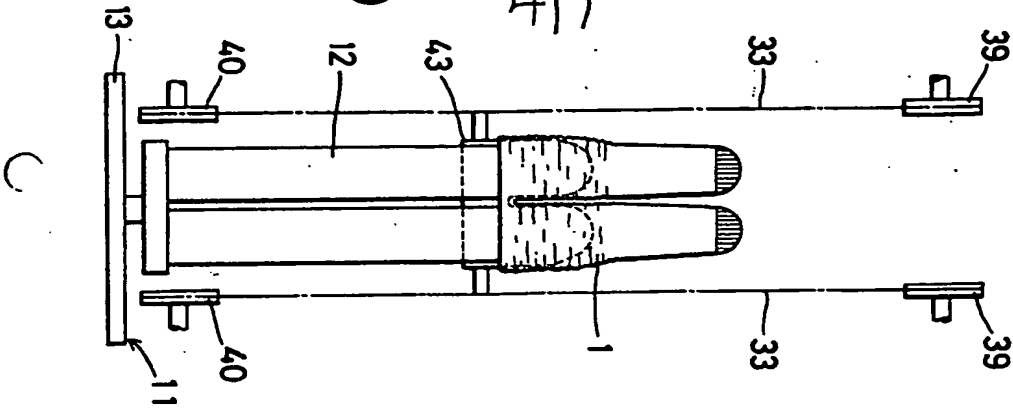


FIG. 7

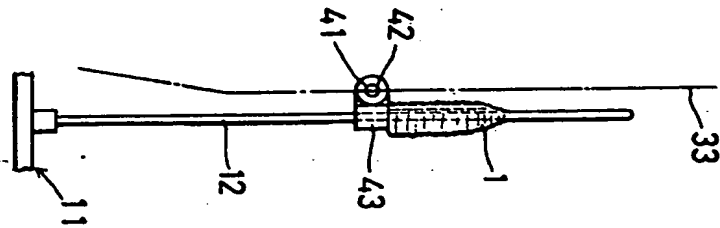


FIG. 9

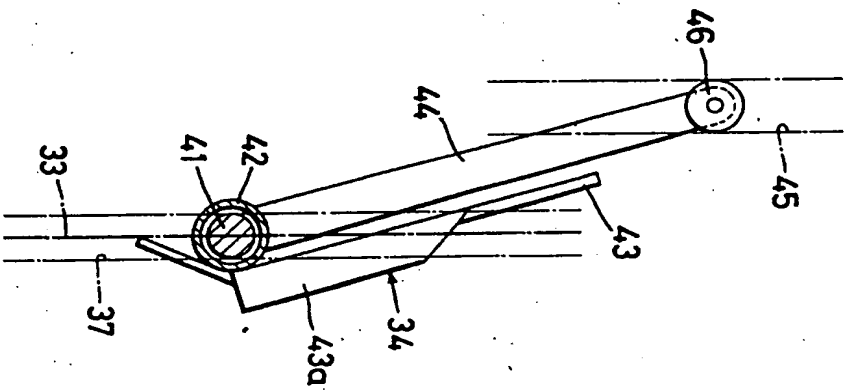


FIG. 8

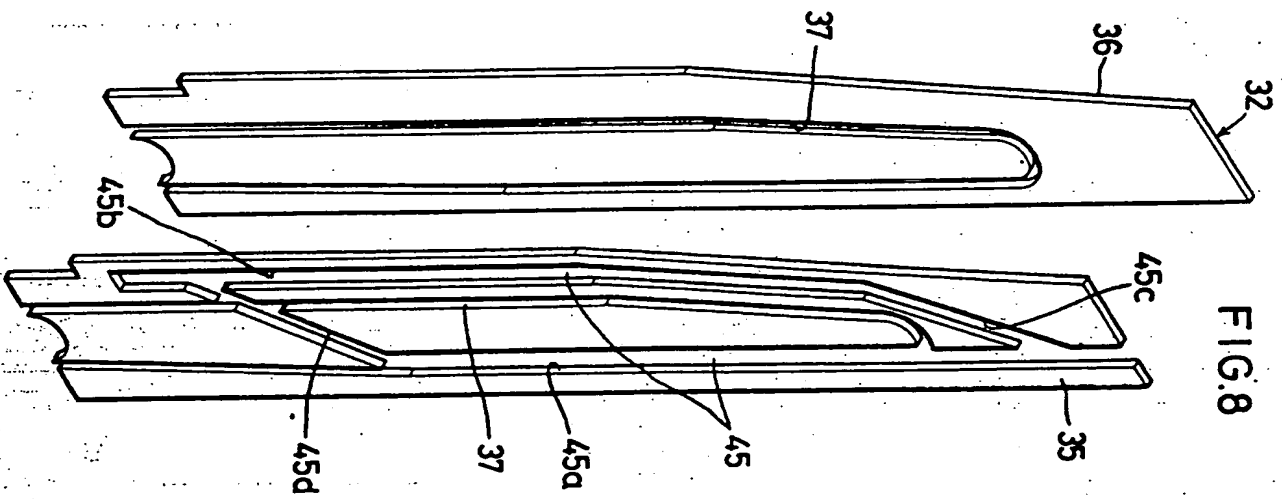


FIG.10

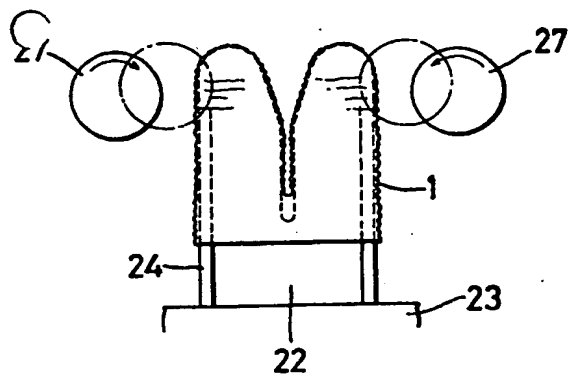


FIG.11

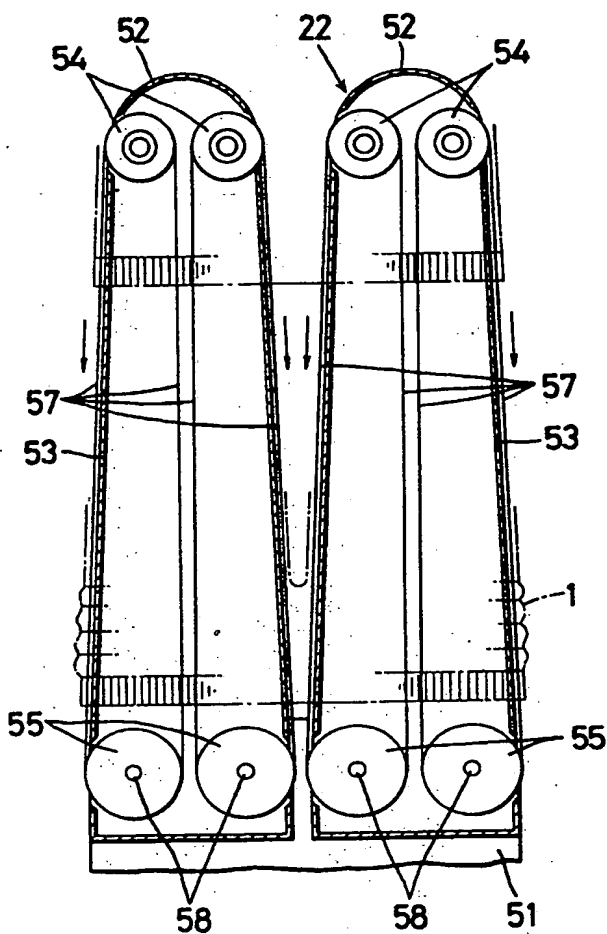


FIG.12

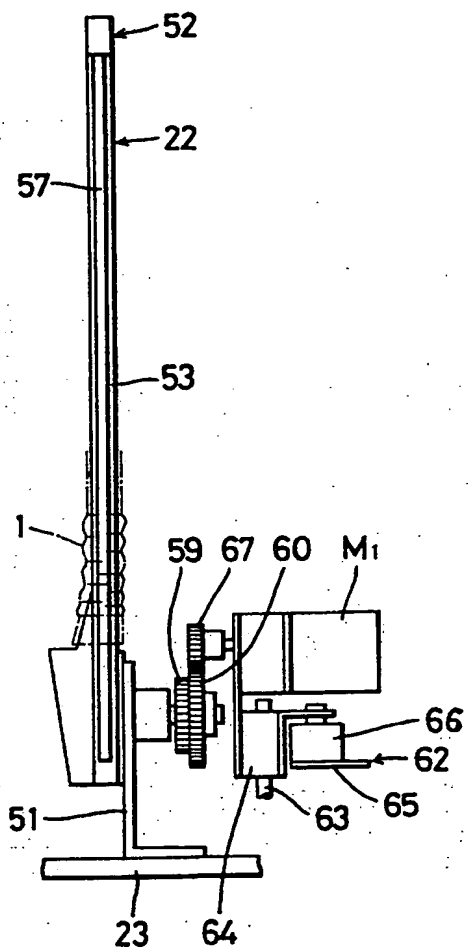


FIG.13

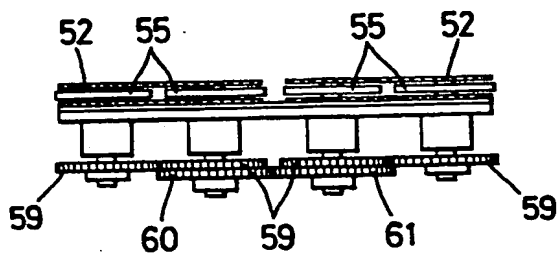


FIG.14

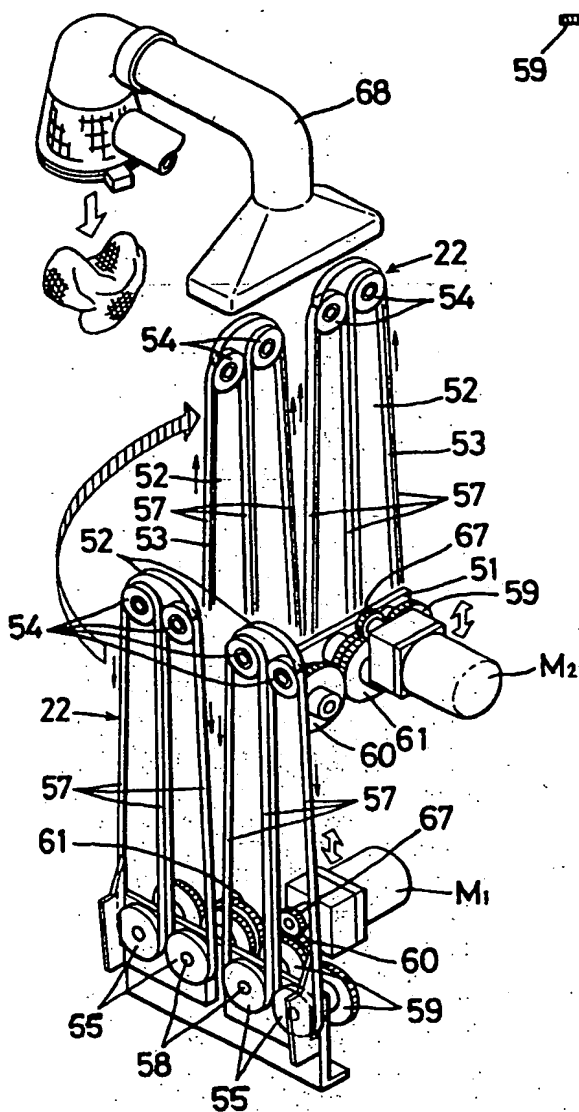


FIG.17

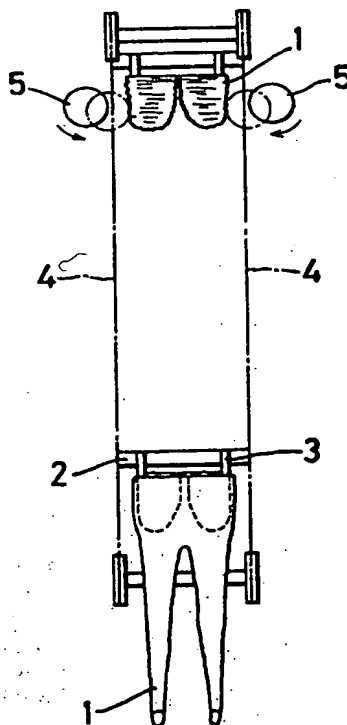


FIG.16

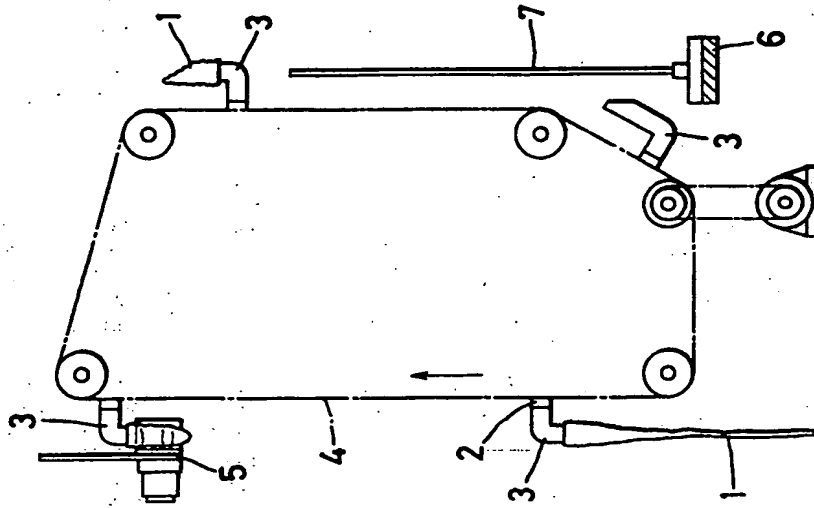
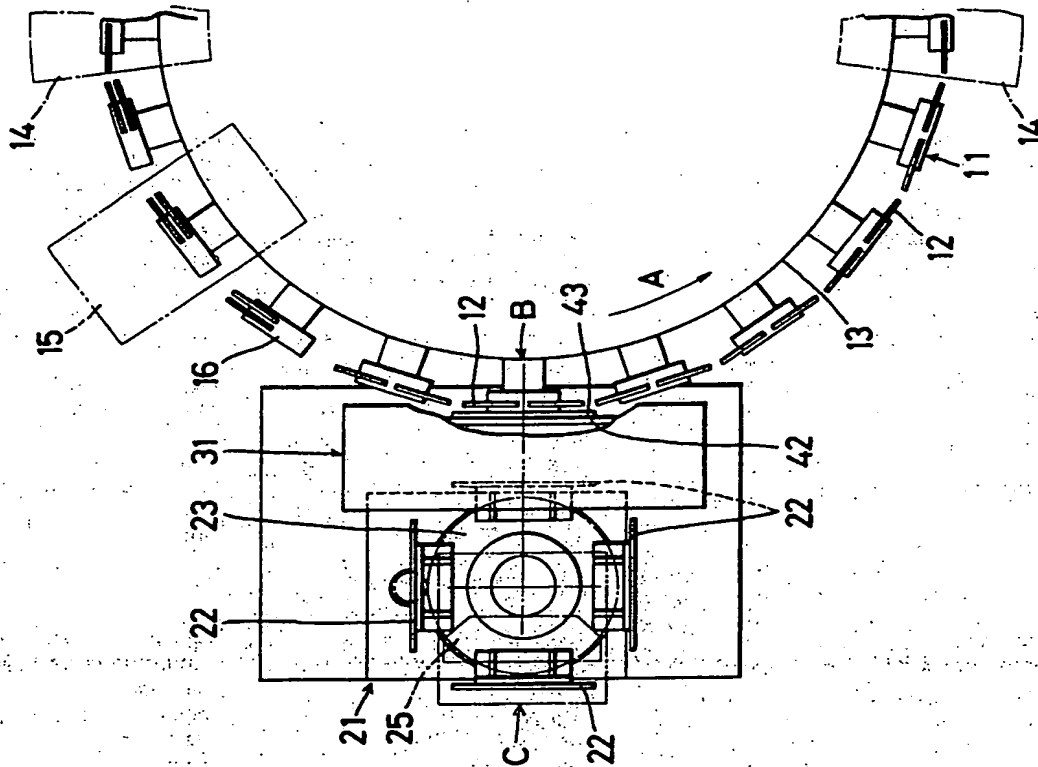


FIG.15



SPECIFICATION

Automatic hose-fitting apparatus

5 This invention relates to an apparatus for automatically fitting long hose such as stockings or pantyhose (hereinafter simply referred to as hose) on a pattern plate of a hose-fitting apparatus. More particularly, this invention relates to an apparatus for automatically taking off inspected hose items from a pattern plate of a hose-inspecting apparatus, taking them to a pattern plate of a hose-fitting apparatus and fitting them on that pattern plate. In the hose production process, hose items on a sewing machine have to be finished on a pattern plate. For this purpose, a hose-fitting apparatus in the factory or workshop is provided with many pattern plates. Accordingly, the automation of the fitting of the hose on the pattern plates has earnestly been studied by hosiery dealers in order to promote a saving in labor and an increase in the working efficiency. A conventional hose-fitting apparatus, which automatically fits hose on a hose-fitting pattern plate, is shown in FIGS. 16 and 17. The apparatus is constructed in such a way that, when a worker fits a pair of hose on a finger 3 of a circulating member 2 carried by an endless belt 4 circulating along a predetermined path, by opening the mouth of the hose (the part fitted on the waist), a roller 5 tucks up the dangling leg part of the hose on the finger, up to the toe part of the hose, in an ascending part of the path. The hose is then fitted on a nearby pattern plate 7 of a hose-fitting apparatus 6 in a descending part of the path so as to spread out the tucked-up leg part.

40 In such conventional hose-fitting apparatus, since the whole leg part of the hose down to the toe part is tucked up on the finger 3, and the tucks in the leg part are spread on the pattern plate 7, hose fitted on the pattern plate is put in a properly tensioned condition, from the waist to the toe part. Therefore, all a worker has to do is to take hose to the finger 3, opening the mouth of the waist part of the hose, i.e. apart from the fitting of the hose on the pattern plate, everything else is carried out very efficiently by the apparatus while the endless belt executes a round trip along a predetermined path whilst repeatedly intermittently stopping. Nevertheless, in the conventional hose-fitting apparatus, there is a problem in that a worker taking hose to the finger and opening the mouth of the hose cannot afford time to inspect the sewn-up hose. This is because the whole leg part, as far down as the toe part, is freely hanging from the finger, which starts to ascend as soon as the worker's fitting is over, and a roller 5 quickly begins to tuck up the hanging leg part. As will be seen from this, it used to be impossible for a worker to closely inspect sewn-up hose

before finishing, not only because such mechanical operations render inspection inconvenient, but also because of such shortage of time.

70 For this reason, inspection has so far been made by a separate worker after the hose has been fitted on a pattern plate 7 of a hose-fitting apparatus, or with the aid of a separate proper inspecting apparatus before finishing is started.

75 As stated above, an extra worker has been required for inspection, in addition to a worker for fitting hose on a finishing-pattern plate. Hence, in these days, the demand for raising the working efficiency and saving labor costs is on the increase.

80 Accordingly, it is an object of this invention to provide an automatic hose-fitting apparatus, which enables one worker to cope with a sequence of jobs, from inspecting sewn-up hose to fitting the latter on a finishing-pattern plate. It is another object of this invention to provide an automatic hose-fitting apparatus, which makes it possible to reduce the production cost by increasing the working efficiency and reducing the production cost due to a saving in extra labor. It is still another object of this invention to provide an automatic hosefitting apparatus, by which a pair of hose fitted on an inspecting pattern plate is spread well so that sufficient inspection can be made exactly and speedily.

In order that the invention may be more readily understood, reference will now be made to the accompanying drawings, wherein:

100 FIG. 1 is a plan view of a hose-fitting apparatus embodying this invention;

FIG. 2 is a longitudinal cross-sectional elevational view of a part of the hose-fitting apparatus shown in FIG. 1;

105 FIG. 3 is a longitudinal cross-sectional side view of a part of the hose-fitting apparatus shown in FIG. 1;

FIG. 4 is an enlarged horizontal cross-sectional view of a part of the hose-fitting apparatus shown in FIG. 1;

110 FIG. 5 is a perspective view of a part of the hose-fitting apparatus shown in FIG. 1;

115 FIG. 6 is a front view showing the spatial relation between the hose-fitting apparatus and a hose-fitting apparatus;

FIG. 7 is a side view of the portion shown in FIG. 6;

120 FIG. 8 is a perspective view of side plates, detached from the hose-fitting apparatus;

FIG. 9 is an enlarged cross-sectional side view showing the spatial relation between a finger and levers of the hose-fitting apparatus;

125 FIG. 10 is an elevational view of a pattern plate for inspection;

FIG. 11 is an elevational view of another type of pattern plate for inspection;

FIG. 12 is a side view of the pattern plate shown in FIG. 11;

130 FIG. 13 is a horizontal cross-sectional view

of the pattern plate shown in FIG. 11;

FIG. 14 is a perspective view of the pattern plate shown in FIG. 11, in operation;

FIG. 15 is a plan view showing the spatial relation between the hose-fitting apparatus and the hose-finishing apparatus in the arranged condition;

FIG. 16 is a side view of a conventional hosefitting apparatus; and

FIG. 17 is a front view of the conventional hosefitting apparatus.

A hose-fitting apparatus embodying this invention is employed in an arrangement such as that shown in FIG. 1. That is, a hose-inspecting apparatus 21 is disposed beside a hose-finishing apparatus 11 with the hose-fitting apparatus 31 located in the space where the pattern plates 12 of the hose-finishing apparatus 11 and the pattern plates 22 of the hose-inspecting apparatus 21 face each other one to one.

In the hose-finishing apparatus 11, a number of pattern plates 12 which are to be fitted with hose are provided on an endless track 13, which intermittently advance in the direction indicated by arrow A, as shown in FIG. 1. On the right of FIG. 1, there is a tunnel-shaped circular encasement 14, through which pairs of hose fitted on the pattern plates 12 are allowed to pass, whereby they are dried and heated for finishing. After they emerge from the encasement, the pairs of hose are taken off the pattern plates 12 by a hose-removal apparatus 15. Each pair of hose undergoes the same process, whereby it is heat-set continuously. The finishing-pattern plate 12, and associated holder 12, which are of two-part form (see FIG. 5), are folded in two over themselves when passing the hose-removal apparatus, so that the packing of the hose can be readily effected.

In the hose-inspecting apparatus 21, there are provided four pattern plates 22 on a rotary circular table 23 at right angles to each other, which can intermittently be moved by 90° in a certain direction. The rotary circular table 23 of the hose-inspecting apparatus is constructed such that each one of the hose-inspecting pattern plates 22 can face, with a proper interval or gap, each one of the hose-finishing pattern plates 12 which comes to the position B where the fitting of the pairs of hose is conducted one after another. At that time, the inspecting pattern plate 22 just behind the one facing the finishing pattern plate 12 is in position C for inspection.

In the case of FIG. 10, each of the inspecting pattern plates 22 is made of a transparent material. Both their sides are also provided with longitudinal projections 24 and an illuminating appliance 25 is provided on the opposite side of the pattern plate 22 at position C in relation to an inspector. Therefore, the inspector can have a close look at both sides of the pairs of hose when they are fitted on

the inspecting pattern plates 22.

Disposed just above the inspecting pattern plate 22, opening at position C, is a suction duct 26, serving to lightly hold the toe part of pairs of hose while they are being fitted on the pattern plate 22. The suction is very helpful for a worker to conduct inspection and smooth fitting. In addition, two rollers 27, capable of being displaced towards and away from each other, are disposed on opposite sides of each inspecting pattern plate 22, which serve to hitch up a pair of hose 1 from the suction before the hose is fitted on the pattern plate 22.

The hose-fitting apparatus 31 takes the tuckedup pairs of hose 1 upwardly off the inspecting pattern plates 22, and then fits them on the finishing pattern plates 12 when they stop at the position B so as to cover them with the hose. The hose-fitting apparatus 31 comprises a couple of composite plates 32 vertically disposed between the inspecting pattern plate 22 and the opposed finishing pattern plate 12, a couple of endless belts 33, disposed outside the plates 32 and a hosefitting member 34 disposed between the endless belts 33.

Each of the plates 32 is constructed from two plate parts 35, 36. A length of vertically elongated endless track 37 is provided in the plates 32 and extends through both plate parts 35, 36. Outside the plates 32 are a couple of stays 38, each of which has two pulleys 39, 40 in the upper and lower parts thereof, and the endless belts 33 pass around, and are guided by these pulleys. Therefore, the belts 33 are movable parallel to the endless tracks 37 in the direction of the arrow D, as shown in FIG. 3, when the lower pulleys 40 are driven by a motor.

The hose-fitting member 34 is disposed between the endless belts 33. The lower end thereof is provided with a fixed shaft 41, which is rotatably inserted into a tube 42. Both ends of the fixed shaft 41 are fixed to the endless belts 33, the shaft passing through the tracks 37. Therefore, portions of the fixed shaft adjacent both ends thereof are engaged in the tracks 37. The tube 42, fitted on the fixed shaft 41, can thus travel along the endless tracks 37 when the endless belts 33 go round. A finger 43 for putting on or taking off hose is fixed to the center of the tube 42, and two levers 44, projecting in the same direction as the finger, are also fixed to the tube 42 near its opposite ends. The structure is such that the finger 43 and the levers 44 can freely swing about the fixed shaft 41, if they are unrestrained.

A cam groove 45, part of which is combined with part of the endless track 37, is provided on the inside plate parts 35, of the two-ply plates 32. A cam roller 46, attached to the free end of each lever 44, is engaged with the cam groove 45, and serves to con-

trol the swinging motion of the levers 44, and therefore the finger 43, when the finger 43 ascends and descends.

The cam groove 45, as shown in FIGS. 3 and 8, shares part of its path 45a with the right hand run of the endless track 37 as viewed in FIG. 8, and extends upwardly. Part of its path 45b vertically runs on the left of the left-hand run of the track 37. The inclined upper part of its path 45c, connects the upper part of the left-hand straight path 45b and the upper part of the right-hand straight path 45a. The inclined lower part of the path 45d connects the lower part of the left-hand straight path 45b and the lower part of the right-hand straight path 45a. In consequence, the cam groove is formed into a loop like a parallelogram.

As shown in FIG. 3, the finger 43 and the levers 44, both the outside edges of which are provided with a couple of flanges 43a, project in the same direction from the outside of the tube 42. While the lower end of the finger 43 travels along the endless track 37, the top of the levers travel along the cam groove 45, whereby the hose-fitting member 34 travels around the endless track 37 with the finger 43 kept standing upright. The upper and lower ends of the cam groove 45 are provided with levers 47, 48 which cause the cam rollers 46 to travel smoothly around in the track.

When the finger 43 ascends from its lowest position, it travels so close to the inspecting pattern plate 22 of the hose-inspecting apparatus 21 that it can enter from the bottom, a pair of hose, tucked up on the pattern plate 22, and take the hose off the pattern plate 22 in an upward direction with the tucks in the hose remaining as they are. When the finger 43 descends from its highest position, it travels so close to that finishing pattern plate 12 of the hose-finishing apparatus 11 which is stopped at position B that it can fit the hose 1 on the pattern plate 12 downwardly from above, and spread the tucks in the hose downwards over the pattern plate 12. When the hose 1 is completely fitted on the pattern plate 12, the finger 43 descends out of the hose 1, and starts to ascend again.

FIGS. 11 and 15 show another example of an inspecting pattern plate 22 for the hose-inspecting apparatus 21. This pattern plate 22 can automatically spread hose over itself by the mechanism now to be described. Therefore, it can thus save man power otherwise required for fitting, and facilitate visual inspection. Moreover, it can automatically take off a pair of hose if the hose should be found to be defective.

The inspecting pattern plate 22 of the second example is, as shown in FIGS. 11 and 12, constructed essentially of a metal mount or base 51 and a pair of upright, transparent, hose-fitting plates 52. The hose-fitting plates

52 have the same structure, that is each plate is vertically elongate in shape, its top is circular and is flat and hollow. The two plates stand side-by-side, with a certain space therebetween, and with their flat surfaces lying in a common plane. An opening 53 is provided in their outer side edges.

Inside each of the hose-fitting plates 52 are two pulleys 54 on both sides of their upper part, and another two pulleys 55 on both sides of their lower part. Endless belts 57 are looped one around each pair of opposing pulleys 54, 55. As shown in FIG. 11, the outer sides of the endless belts 57 project slightly or gently relative to the opening 53. Therefore, part of each endless belt 57 exposed from the opening serves to push down or push up a pair of hose fitted over the hose-fitting plates 52.

Each of the pulleys 55 is journaled in the lower part of its associated hose-fitting plate by a bearing shaft 58 which is fixed to the pulley and to a gearwheel 59. The gearwheels 59 of the two pulleys 55 common to each hose-fitting plate mesh with each other, so that they are constrained to rotate simultaneously in opposite directions. Additionally, the two inner pulleys 55 as viewed in FIG. 11 are similarly coupled together for simultaneous rotation in opposite directions by intermeshing gearwheels 60, 61 fixed to their bearing shafts 58. Therefore, the endless belts 57 carried by both hose-fitting plates 52 will rotate in a synchronous manner, as indicated by the arrows in FIG. 11.

Four inspecting pattern plates 22 are disposed on the rotary circular table 23 of the hose-inspecting apparatus 21 at rights angles to each other. Therefore, they are designed to revolve between positions or stations where pairs of hose are inspected, and where they are received by the hose-finishing apparatus 11, as the table 23 rotates intermittently 90° by 90°.

As shown in FIG. 14, a motor M₁ is disposed at the hose inspection position C so as to be able to mesh with the gearwheel 60 of that inspecting pattern plate 22 which is stopped at position C for inspection, in order to hitch down the pair of hose by means of the endless belts 57. In addition, a motor M₂ is disposed between the hose inspection position C and the hose-fitting position B so as to be able to mesh with the gearwheel 61 of an inspecting pattern plate 22 at that intermediate position in order to remove defective hose by means of the endless belts 57. Since supporting structures 62 for both the motors M₁ and M₂ have the same configuration, the same numerals are to be applied to the equivalent parts in the following description.

As shown in FIG. 12, the supporting structure 62 for the motor M₁ or M₂ is secured to a bracket 64 slidable up and down on a vertically fixed shaft 63. The supporting structure

includes a cylinder 66 disposed between the slidable bracket 64 and a fixed base 65. Thus, the motor M_1 or M_2 is raised or lowered by actuating the cylinder 66. A gearwheel 67, attached to the output shaft of the motor, is designed to separate from the gearwheel 60 or 61 so as not to hinder the rotational movement of the inspecting pattern plate 22 when the motor M_1 or M_2 is raised. The gearwheel 67 is coupled with the gearwheel 60 or 61 when the motor M_1 or M_2 is lowered, so that the endless belts 57 can travel around the pulleys 54 and 55, driven by the motor M_1 or M_2 .

The hose-inspecting apparatus employing the pattern plate of the second example has such structure that, when the inspecting pattern plate stops at the hose inspection position C due to the intermittent rotational movement of the rotary circular table 23, the motor M_1 is lowered by the contraction of the cylinder 66 and the shaft 67 of the motor M_1 meshes with the gearwheel 60. The endless belts 57 begin to travel around the pulleys 54, 55 as shown by the arrows in FIG. 11, concurrently with the start of the motor M_1 . A pair of hose 1 is put on the hose-fitting plates 52 from the opened waist part. The endless belts 57 hitch or pull down the hose 1 and fit it on the hose-fitting plates 52 as shown in FIGS. 11 and 12. At this moment, a worker can inspect the hose being pushed down in an automatic fashion with his/her own eyes. When the inspection is over, the cylinder 66 extends so as to raise the motor M_1 to its upper position. When the gearwheel 67 separates from the gearwheel 60, the rotary circular table 23 makes one quarter of a revolution around its axis in order to advance the inspecting pattern plate 22 to the next stop. If the inspected hose 1 is good, then the supporting member 62 is not actuated and the hose is forwarded to position B to be received by the pattern plate 12 of the hose-fitting apparatus 11. If, however, the inspected hose 1 is found to be defective, then the cylinder 66 contracts so as to lower the motor M_2 as a worker switches on the supporting member 62. The gearwheel 67 is engaged with the gearwheel 61, and this makes the endless belts 57 travel in reverse, tucking up the hose 1 in order to remove it from the inspecting pattern plate 22. Meanwhile, the removed hose is sucked up by means of a suction duct 68 just above the inspecting pattern plate 22 and carried away to a given place, as shown in FIG. 14.

As stated above, the hose-fitting apparatus embodying this invention is constructed such that, when a worker standing at inspection position C fits a pair of hose on an inspecting pattern plate 22 of the hose-inspecting apparatus 21 by opening the mouth of the hose, and completes the inspection of the spread hose, the rotary circular table 23 rotates by

90° and the next inspecting pattern plate 22 advances in front of the worker, preparatory to putting on another pair of hose. When the pattern plate 22, covered with the hose 1, arrives at position B where the pattern plate 12 of the hosefinishing apparatus 11 is waiting to receive the hose 1, the finger 43, in the upright position, starts to ascend from the bottom position and enters the tucked up hose during its ascending advance, to take it off the inspecting pattern plate 22 in an upward direction.

When the finger 43 gets to its top position, keeping its upright position, it begins to descend alongside the pattern plate 12 of the hose-fitting apparatus 11 whilst maintaining its upright position. Therefore, the hose 1 is put on the finishing pattern plate 12 during the descending advance. Since the top of the pattern plate 12 butts against the inside of the toe part, the hose 1 is spread from the toe part and is automatically properly fitted over the pattern plate 12. The finger 43 is withdrawn from the hose and turns to the ascending movement in order to receive the next hose. The hosefinishing apparatus 11 makes a one-step or pitch advance on its circular track each time the hose 1 is fitted on the pattern plate 12 in order to forward the next pattern plate, not covered with a pair of hose, to position B. Thus, the pairs of hose on the pattern plates are allowed to pass through the tunnel-shaped encasement 14 to be given the desired heat-set, withdrawn from the pattern plate at the hose-removal apparatus 15, and packed there right away.

As stated above, the visual inspection of the hose on the inspecting pattern plate 22 of the hoseinspecting apparatus 21 and the fitting of the hose on the pattern plate 12 of the hose-fitting apparatus 11 can be accomplished by one worker.

CLAIMS

1. An apparatus for automatically fitting on a pattern plate of a hose-fitting apparatus, hose transferred from a pattern plate of a hose-inspecting apparatus, wherein said hose-inspecting apparatus is disposed so that at least one of the pattern plates of said hose-inspecting apparatus can face at least one of the pattern plates of said hose-fitting apparatus with a space therebetween, plate means provided with an endless track are disposed on both sides of the location of said opposing pattern plates, a hose-fitting member is disposed between a pair of endless belts, which can circulate in a certain direction generally along said endless track, said hose-fitting member comprises a fixed shaft generally horizontally spanning said endless belts, a tube or equivalent fitted on said fixed shaft so as to be freely rotatable thereon, a finger secured to said tube, operable to take off hose from said pattern plate of said hose-inspecting apparatus

during ascending advance of the finger by way of said endless track and fitting hose on said pattern plate of said hose-finishing apparatus during descending advance of the finger by way of said endless track, and a pair of levers secured to said tube together with said finger, freely swingable about said fixed shaft in association with said finger, and a cam groove, associated with the plate means, to control the swinging movement of said finger, to receive and guide a cam roller associated with said levers.

2. A hose-fitting apparatus according to claim 1, in which each of said pattern plates of said hose-inspecting apparatus and of said hose-finishing apparatus is shaped as a double-forked plate for fitting hose thereon, and said finger is of double-forked form to enter the leg part of hose.

3. A hose-fitting apparatus according to claim 1 or 2, in which the plate means on each side of the opposing pattern plates is constructed of two combined plates, said endless track being pierced through both combined plates, and said cam groove being pierced through only the inside one of said combined plates with a part of the cam groove overlapping part of said endless track, said fixed shaft, whose two ends each pass through one of said combined plates, horizontally spans said endless belts disposed outside said plates parallel to said endless track, said finger and said levers are fixed to said tube which is fitted on said fixed shaft and engaged in said endless track, said cam roller provided on one end of each lever is engaged in said cam groove in order to control the swinging movement of said finger during the ascending and descending advance thereof.

4. A hose-fitting apparatus according to claim 1, 2 or 3, in which said pattern plates of said hose-inspecting apparatus are each constructed as a hollow, vertically elongated, flat, double-forked plate with an opening on both sides, two pulleys are provided in the upper and the lower parts of each forked part of said double-forked plates, an endless belt is looped around each pair of upper and lower pulleys, with the outer runs of the endless belt being exposed to outside through said openings, each pair of lower pulleys are adapted to rotate in opposite directions by intermeshing gearwheels fixed to shafts of the lower pulleys, and a motor is provided to drive said endless belts via gearwheels.

5. A hose-fitting apparatus according to claim 4, in which a pair of hose-fitting plates are placed in line with each other so as to form one plane, said pulleys and said endless belts are built in said hose-fitting plates, and said gearwheels for driving said endless belts are engaged with each other in the lower part of said hose-fitting plates.

6. Hose production apparatus comprising hose-inspection apparatus including hose-sup-

port devices, hose-finishing apparatus including hose-support devices, items of hose, when supported by said devices, being fitted over said devices with said devices entering and extending upwardly into the items of hose from below, means to effect relative displacement between the hose-support devices of the inspection and finishing apparatus to bring successive inspection hose-support devices fitted with hose, and successive finishing hose-support devices to be fitted with hose, into mutually opposed relation with a space therebetween, apparatus for automatically transferring hose from the inspection to the finishing hose-support devices including a hose-support device mounted for generally vertical reciprocatory movement in said space, means to bring the transfer hose-support device and an opposed inspection hose-support device into relative proximity during an upward component of said reciprocatory movement to cause the transfer hose-support device to engage from below in, and lift off, hose from the opposed inspection hose-support device, and to bring the transfer hose-support device and the opposed finishing hose-support device into relative proximity during a subsequent downward component of said reciprocatory movement to cause the opposed finishing hose-support device to engage from below in, and lift off, the hose from the transfer hose-support device.

7. Apparatus according to claim 6, wherein the inspection, finishing and transfer hose-support devices are generally vertically elongate and have free upper ends, and the inspection and finishing hose support devices are mounted for movement along respective generally horizontal paths to and from a transfer station where the hose transfer apparatus is located and where successive inspection and finishing hose-support devices are brought into said opposed spaced relationship, the transfer hose-support device being carried and reciprocable by and generally following the path of travel of, an endless conveyor having generally vertical runs, with the planes of the upward and downward runs being respectively disposed proximate the opposed inspection and finishing hose-support devices, the transfer hose-support device being pivotable relative to the conveyor about a generally horizontal axis, with the pivotal movement being controlled by a cam and follower arrangement to maintain the transfer hose-support device generally upright during pick up of hose from an opposed inspection hose-support device and placement of hose on an opposed finishing hose-support device.

8. Automatic hose fitting apparatus, substantially as hereinbefore described with reference to Figures 1 to 10 of the accompanying drawings.

9. Apparatus according to claim 8, modified substantially as hereinbefore described with

reference to Figures 11 to 14 of the accompanying drawings.

10. Hose production apparatus incorporating hose fitting/transfer apparatus according to any preceding claim.

CLAIMS

Amendments to the claims have been filed, and have the following effect:

- 10 Claims 6 and 7 above have been deleted. New or textually amended claims have been filed as follows:
- Claims 8, 9, 10 above have been re-numbered as 6, 7, 8 and their appendancies corrected.
- 15 6. Automatic hose fitting apparatus, substantially as hereinbefore described with reference to Figures 1 to 10 of the accompanying drawings.
- 20 7. Apparatus according to claim 6, modified substantially as hereinbefore described with reference to Figures 11 to 14 of the accompanying drawings. 8. Hose production apparatus incorporating hose fitting/transfer apparatus according to any preceding claim.
- 25

Printed for Her Majesty's Stationery Office
by Burgess & Son (Abingdon) Ltd. Dd 8991685, 1987.
Published at The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.

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